

Emergency Medical Dispatch



Trainee Guide

U.S. Department of Health & Human Services
Public Health Service



HRSA

Health Resources & Services Administration
Maternal & Child Health Bureau



People Saving People

**EMERGENCY MEDICAL DISPATCH
NATIONAL STANDARD CURRICULUM
Trainee Guide Introduction**

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NATIONAL STANDARD CURRICULUM
*Trainee Guide Introduction***

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National Highway Traffic Safety Administration

**Emergency Medical Dispatch:
National Standard Curriculum**

TRAINEE GUIDE

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EMERGENCY MEDICAL DISPATCH NATIONAL STANDARD CURRICULUM

Trainee Guide Introduction

PURPOSE

This Trainee Guide is intended to be used as a learning tool for the National Highway Traffic Safety Administration Emergency Medical Dispatch National Standard Curriculum. The purpose of this training course is to provide trainees with the knowledge and skills necessary to perform their jobs at their local agency.

The Trainee Guide has been developed with the needs of the beginning Emergency Medical Dispatcher (EMD) in mind. It allows you to follow the instructor's presentation format during the EMD training course. You may also refer to the Trainee Guide after attending the course. This Trainee Guide is not intended to serve as a user manual, but to be used as a guide to the EMD training course participants.

This Trainee Guide establishes the NHTSA standard curriculum for EMD. It represents the required content of any EMD curriculum.

COURSE GOALS

The overall goal of the NHTSA EMD Course is to:

- ◆ Ensure that all users possess the baseline knowledge, skills and abilities to successfully function in the role of EMD call-taker or dispatcher.

COURSE STRUCTURE

This EMD Course is a 24-hour minimum course designed to elevate trained and experienced public safety telecommunicators to effectively direct and manage their emergency medical resources. This course primarily focuses on end user productivity in obtaining information from callers, selecting the proper protocol, dispatching proper resources and giving telephone medical instructions. Other areas of significance are the basic philosophy of EMD, legal concepts important to the EMD's job and basic medical concepts necessary for understanding the medical content of emergency medical dispatch.

EMERGENCY MEDICAL DISPATCH NATIONAL STANDARD CURRICULUM Trainee Guide Introduction

This course will provide EMD trainees with the skills and knowledge necessary to effectively dispatch resources for medical emergencies. The course is broken down into individual topics called modules. Each module is further sequenced into units. The modules and units were developed based on the behavioral learning objectives established. These behaviors represent the required behaviors of effective EMD personnel. The course is organized into four modules, to be taught sequentially in the order listed below:

- Module 1: Basic Emergency Medical Dispatch Concepts
- Module 2: Information Gathering and Dispatch
- Module 3: Introduction to the EMDPRS and 32 Chief Complaint Types
- Module 4: Practical Examination Overview

The information contained in the above modules will be taught using instructor presentations, demonstrations and practical exercises designed to reinforce classroom learning. Exercises will typically begin with an instructor-led example, followed by a more difficult exercise with instructor assistance available when necessary, and concluding with unassisted (but instructor-supported) exercise(s). The course will end with a comprehensive, hands-on exercise encompassing all that was learned in the course.

MODULE 1

Basic Emergency Medical Dispatch Concepts

MODULE OVERVIEW

Successful Emergency Medical Dispatch requires a complex combination of skills and knowledge. These skills, along with the knowledge required to develop them, are used daily to save the lives of people across this country.

Module 1, Basic Emergency Medical Dispatch Concepts, introduces the basic concepts behind developing good emergency medical dispatch skills. It forms the basis for the rest of the course. As you progress through the module, you will learn and understand the roles and responsibilities you will have as an Emergency Medical Dispatcher (EMD).

This module presents the basic philosophy of emergency medical dispatch, including the roles and responsibilities of the EMD. It also presents basic information about legal and liability issues the EMDs face, as well as basic emergency medical concepts that you, as an EMD trainee, need to know to more effectively perform your duties.

Module 1 contains the following Units:

- Unit 1: Introduction to the EMD Roles and Responsibilities*
- Unit 2: Legal and Liability Issues in Emergency Medical Dispatch*
- Unit 3: Introduction to Emergency Medical Concepts*

MODULE OBJECTIVES

Upon completion of this module, you will be able to:

1. Describe the functions, roles and responsibilities of an effective EMD.
2. Identify legal and liability issues that the EMD faces.
3. Identify strategies to avoid litigation.
4. Describe medical concepts as they relate to the EMD function.

MODULE 1
Basic Emergency Medical Dispatch Concepts

Module 1 - Unit 1

Introduction to the EMD Roles and Responsibilities

UNIT OVERVIEW

The roles and responsibilities of the Emergency Medical Dispatcher (EMD) vary, in some respects, by locale. However, there are some functions and characteristics common to all EMDs.

Unit 1, Introduction to the Emergency Medical Dispatcher Roles and Responsibilities, introduces you to the basic concepts of Emergency Medical Dispatch. It provides you with information relating to the functions of the EMD and what it takes to be an effective EMD. Unit 1 also outlines the basic roles and responsibilities of the EMD and provides information about the three phases of the dispatch function. This unit forms the basis for the remainder of the course. Successful completion of this unit, therefore, is required to successfully complete the rest of the course.

UNIT OBJECTIVES

Unit Learning Objective

Upon completion of this unit, you will be able to:

1. Describe the functions, roles and responsibilities of an effective EMD.

Enabling Learning Objectives

To meet the unit learning objective, you will:

- 1.1 List/explain the five functions of the EMD.
- 1.2 List the basic prerequisites to being a successful dispatcher.
- 1.3 Identify roles and responsibilities of the EMD.
- 1.4 List/explain the three phases of the dispatch function.
- 1.5 Describe the local Emergency Medical Service (EMS) system.

Module 1 - Unit 1

Introduction to the EMD Roles and Responsibilities

Module 1 - Unit 1

Introduction to the EMD Roles and Responsibilities

ABOUT THE COURSE

Emergency Medical Dispatch involves the combination of telecommunication skills and medical knowledge. An Emergency Medical Dispatcher (EMD) must successfully master this body of skills and knowledge in order to be most effective in serving the public emergency medical needs as part of the local EMS system.

The National Highway Traffic Safety Administration's *Emergency Medical Dispatch: National Standard Curriculum* is designed to provide this skill and knowledge. The course is an advanced public safety dispatch course, with its main emphasis on the medical side of emergency dispatching. This course does *not* focus on the telecommunications aspect of an EMD's job.



NOTE: This curriculum is designed for use when developing a locally relevant curriculum. It is not to be accepted as THE curriculum for any locale without first being reviewed, modified (as needed or required) and officially authorized by the local medical authority.



NOTE: Throughout this document you will see the acronym EMD. This acronym has two meanings. EMD can mean "Emergency Medical Dispatcher" or "Emergency Medical Dispatch," depending on the context in which is used.

Module 1 - Unit 1

Introduction to the EMD Roles and Responsibilities

The National Highway Traffic Safety Administration's *Emergency Medical Dispatch: National Standard Curriculum* is designed to provide enough material to ensure you will be able to:

1. State and identify the roles and responsibilities of an Emergency Medical Dispatcher;
2. Obtain sufficient and accurate information from callers to dispatch resources properly and efficiently;
3. Allocate resources properly and according to local medically approved protocols;
4. Recognize the need for and be able to recall EMS resources as appropriate and necessary;
5. Give appropriate initial emergency medical care instructions to callers as locally approved medical interrogation protocols indicate and
6. Understand the medical information found in locally approved Emergency Medical Dispatch Protocol Reference Systems (EMDPRSs).

Module 1 - Unit 1

Introduction to the EMD Roles and Responsibilities

Icons You Should Know



The following table shows icons you will see in the left column of this course. Each icon in the left column means something different. The meaning of each icon is:




	The hand icon tells you that you are reading something important. When you see this icon you should read carefully because you might see the information again in an exercise or exam.
	The pencil icon tells you that the instructor will probably elaborate at this point. You should take notes here because you may see the information again, in an exercise or exam.
	When you see the question-mark icon, you have the chance to ask questions, or you may be given a question that you should be prepared to answer.

Table 1-1, Icon Legend

Background Information/History

First, the EMD is the primary and initial point of contact for callers seeking some sort of medical assistance. Second the EMD serves as a vital communication link between and among other parts of the Emergency Medical Service system.

Also, the EMD helps callers administer initial emergency medical care to patients who need assistance. In this respect, EMDs assist callers in saving the lives of patients in whose behalf they call.

Module 1 - Unit 1

Introduction to the EMD Roles and Responsibilities

?

QUESTION: *Why would **you** consider yourself an essential part of your EMS system?*

Introduction to Emergency Medical Dispatch



Common Misconceptions About EMD. Despite the obvious need for EMDs, there are many misconceptions about Emergency Medical Dispatch and EMDs. Some of these misconceptions are listed below.

1. *Callers are too upset to provide accurate and useful responses to the EMD.* Experience indicates that using the question sequences provided by the EMDPRS will allow you to elicit information necessary for effective dispatch.
2. *Callers would not be able to provide the EMD with required information that is necessary to effectively dispatch emergency medical resources.* The EMDPRS protocols are designed so that you can get the proper medical information you need for effective dispatch.
3. *The medical expertise required for effective emergency medical dispatch is not important, therefore public safety officials should use non-EMD dispatchers to dispatch resources.* One of your most important jobs is to give out medical instructions when told to do so by the EMDPRS.

EMDs are advanced telecommunicators. You will receive specific emergency medical dispatch training and be taught to use your EMDPRS to decide which resources to dispatch.

Common Misconceptions About EMD

- ▶ Callers are too upset to provide accurate and useful responses to the EMD.
- ▶ Callers are unable to provide EMDs with information needed for effective dispatch.
- ▶ Medical expertise is unimportant, so why not use other public safety dispatchers?

1-1-1

4. *All EMS calls must be answered "lights and sirens."*
In most cases, this is unnecessary. Most calls are not life-threatening. Use of an all-out response can be dangerous for both responders and bystanders. Refer to your locally approved EMDPRS for the appropriate responses available to you.
5. *The EMD is too busy dispatching to worry about asking all those questions, to provide instructions or use their protocol cards (EMDPRS).* This is your job! In this case, effectiveness is the key concern. You are trained to use the EMDPRS, which contains questions designed to get you the information you need for effective dispatch.
6. *Medical advice (provided over the phone) cannot help patients and could actually be dangerous.* You are trained to use the EMDPRS. The EMDPRS is approved by a local medical authority whose job it is to see that the EMDPRS your office uses is NOT going to hurt anyone.

Module 1 - Unit 1

Introduction to the EMD Roles and Responsibilities

7. *Using the EMDPRS increases the amount of time and resources required to process a call.*
Experience has shown that the time required to process a call increases very little in systems using the EMDPRS, when compared to systems that do not use them. In some cases, the response time even decreases.

Common Misconceptions About EMD

continued...

- ▶ It is dangerous NOT to go "lights and sirens."
- ▶ The EMD is too busy to worry about asking questions, giving instructions or using the EMDPRS.
- ▶ Medical advice provided over the telephone can't help patients and could be dangerous.

1-1-2

These myths are common. This course gives information to help you dispel these myths. Remember, the purpose of this course is to give you the skills and knowledge required to do your job.

?

QUESTION: *What are five of the most common myths about EMDs? Why are they wrong?*

Module 1 - Unit 1

Introduction to the EMD Roles and Responsibilities



Responsibilities of the EMD. As an emergency medical dispatcher, you play a vitally important role in the EMS system. Some of your responsibilities are obvious, others are not so obvious. Your responsibilities as an EMD are discussed in the following paragraphs.

An EMD serves to receive and process calls for Emergency Medical Service assistance. Because of this, you must receive training in the use and handling of telecommunications equipment. This course does NOT provide that training.

An EMD must determine the nature and severity of the medical incident type. You decide what is wrong, using the EMDPRS. It tells you what type of response you should make, including what types of units to send and what instructions you can give to callers.

An EMD is responsible for the coordination and dispatch of EMS resources. You coordinate and dispatch resources based on the pre-determined response configurations found in the local medically approved EMDPRS. You must know the availability of all resources in your system.

The EMD provides emergency medical assistance using the local medically approved EMDPRS. You may have to provide callers with emergency medical instructions. The EMDPRS will tell when you need to do this. Remember, most calls are not life threatening. The information you give will mostly be used to make the patient more comfortable and ensure their health and safety until dispatched medical personnel arrive.

Responsibilities of the EMD

- ▶ Receives and processes calls for EMS assistance.
- ▶ Determines the nature and severity of medical incidents.
- ▶ Coordinates and dispatches EMS resources.
- ▶ Gives emergency medical assistance via locally approved EMDPRS.

1-1-3

An EMD relays pertinent information to responding personnel. Another responsibility of yours is to relay information about the patient to the responding unit(s). This usually includes information about the patient's location and current status.

The EMD attempts to ensure the safety of the patient, bystanders and responders. You are required to attempt to ensure the safety of patients, bystanders and responders by warning them to remove patients from any immediate danger of further injury if possible. The EMDPRS tells you when to do this.

An EMD provides instructions to callers that will help them prepare for the arrival of responders, based on the instruction of the EMDPRS. Your EMDPRS provides information that you can relay to callers prior to the arrival of dispatched personnel. This information makes the work of the responders easier. It includes things like locking up dogs and unlocking doors.

Module 1 - Unit 1

Introduction to the EMD Roles and Responsibilities

The EMD coordinates with other public safety and emergency medical services as required by the situation. Based on the situation at hand, it may be necessary for you to contact other public services (like HAZMAT, Air Ambulance, etc.). Usually, air ambulance requests are issued to you by the responder at the scene. It is up to you to know and refer to your local procedures for contacting air ambulance services.

Responsibilities of the EMD

continued...

- ▶ Relays pertinent information to responding personnel.
- ▶ Attempts to ensure safety of patients, bystanders and responding personnel.
- ▶ Gives instructions to callers (using the EMDPRS), helping them prepare for responder arrival.
- ▶ Coordinates with other public safety and EMS services as required by the situation.

1-1-4

Module 1 - Unit 1

Introduction to the EMD Roles and Responsibilities

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QUESTION: *What are your responsibilities as an EMD?*



Attributes/Behaviors of the Successful EMD. Knowing the responsibilities of an EMD is simply not enough to be successful at it. There are certain attributes and/or behaviors of EMDs that separate the successful EMD from the rest.

The successful EMD is helpful and compassionate. Dispatchers who train to be EMDs do so for various reasons. Compassion for others and the desire to help them are two of the most important characteristics of a good EMD. EMDs show compassion for their callers and treat them with respect.

A successful EMD effectively handles the emotional stress involved in caller/patient crisis situations and clearly guides callers in these situations. Callers, patients and even you will likely be in high states of anxiety. It is up to you to calm them and yourself, gather information necessary for proper dispatch and provide callers with instructions (medical or "pre-arrival") that help in giving aid and comfort to the patient.

The successful EMD masters the skills, philosophy and knowledge of Emergency Medical Dispatch. To be successful, you must learn and master the skills required for effective emergency medical dispatch. These skills can be taught through courses and practice.

A successful EMD effectively gathers information from callers, prioritizes that information and consolidates that information in a useful format. It is essential that you be able to do all of this. Although most calls you will receive are not life-threatening (as stated earlier), there are instances where time is a critical factor in the survival of

Module 1 - Unit 1

Introduction to the EMD Roles and Responsibilities

the patient. You should practice getting information in order to facilitate the dispatch process.

A successful EMD assists other EMS personnel in reaching the patient's location. Without location information given by you, dispatched personnel could not find the patient.

The successful EMD determines the nature of the medical emergency without diagnosing the medical problem or condition. Your job is to determine the medical emergency and dispatch personnel to deal with it.

Successful EMDs assist EMS personnel on the scene as requested by EMS personnel and avoid making patient care decisions by long distance. Once you have dispatched EMS personnel, you are to provide the pre-arrival and/or medical instructions to the caller as indicated by the EMDPRS. Once they arrive on the scene you are to assist responders by doing what they ask you to do.

A successful EMD reacts passively to hostile callers, making no judgments based on the caller's demeanor or past experience with the caller. As an EMD, you are expected to dispatch based on the information you gather from a caller in response to the questions you ask (from the EMDPRS). Caller demeanor can be deceptive. What may sound like an inebriated caller (slurred speech, slow or "wandering" response to your questioning) could be a caller suffering a stroke or a diabetic with low blood sugar.



*A successful EMD maintains confidentiality. Under no circumstance are you allowed to give out information about a patient or caller. This includes knowledge of HIV infection. **Check with your local legal counsel about local HIV regulations. If you are provided with the information, ask the caller to inform the responding personnel upon their arrival at the scene.** If someone calls and requests information about a patient's status or name, you are only allowed to tell them where the ambulance is taking a patient.*

Module 1 - Unit 1

Introduction to the EMD Roles and Responsibilities

Attributes/Behaviors of Successful EMDs

- ▶ Helpful/compassionate
- ▶ Handles stress
- ▶ Masters skills of EMD
- ▶ Effectively gathers information
- ▶ Assists responders in locating patients
- ▶ Determines nature of medical situation without diagnosing
- ▶ Reacts passively to hostile callers
- ▶ Maintains confidentiality

1-1-5

?

QUESTION: *How would you describe a successful EMD? What characteristics should one have? What kinds of things would a successful EMD do or not do?*



Three Phases of the Dispatch Function. Knowing your basic responsibilities, and what it takes to be a successful EMD is not enough. As you may or may not know, there are three major phases of the dispatching function.

Module 1 - Unit 1

Introduction to the EMD Roles and Responsibilities

Phase 1 - Call Receiving Activities. In this phase, an EMD takes an incoming call and goes through an "all-caller interrogation" sequence. This sequence essentially allows the EMD to determine the location of the patient (**WHERE?**), the nature of the medical emergency (**WHAT?**), how it occurred (**HOW?**), to whom it occurred (**WHO?**) and when it occurred (**WHEN?**). Based on the information received, the EMD can immediately go to the proper protocol located in the EMDPRS and continue on to the next dispatch phase.

Three Phases of the Dispatch Function

PHASE 1 - CALL RECEIVING ACTIVITIES

- ▶ EMD takes incoming calls
- ▶ Engages caller in "initial survey" sequence
 - Where?
 - What?
 - How?
 - Who?
 - When?
- ▶ EMD then goes to proper EMDPRS protocol for further information

1-1-6

Phase 2 - Dispatch Activities. Questioning continues in this phase, and based on the information gathered during the call receiving phase, the EMD turns to the proper protocol. This protocol provides the proper response mode. Response modes are pre-determined by local medical authorities for the most effective response to the call type. The EMD dispatches EMS personnel to the scene in the proper, pre-determined mode and configuration .

Three Phases of the Dispatch Function

PHASE 2 - DISPATCH ACTIVITIES

- ▶ EMD goes to proper protocol
- ▶ Protocols give appropriate response mode
 - established by local medical authority
- ▶ EMD dispatches response personnel in proper mode and configuration

1-1-7

Phase 3 - Post-Dispatch Activities. Once resources have been dispatched, the EMD engages in preparing the caller/patient for the arrival of responding EMS personnel. The EMD also updates responding personnel with additional information as it is received. This could involve giving the caller pre-arrival instructions like unlocking doors, locking up dogs, turning on lights, gathering patient medications as indicated in the EMDPRS, etc. It may also involve the provision of medical instructions as indicated by the EMDPRS.

Three Phases of the Dispatch Function

PHASE 3 - POST-DISPATCH ACTIVITIES

- ▶ EMD prepares caller for responding personnel
- ▶ EMD provides medical instructions as directed by the EMDPRS

1-1-8



The Emergency Medical Service (EMS) System. Where does the EMD fit into the scheme of the EMS system? The answer to this question varies by locale. Your system may be very different than the EMD in the next county, city or suburb. In addition to the responsibilities you have already learned, there is one more: *It is the responsibility of the EMD to fully understand the EMS system in which s/he works.*



EMD vs EMS. What's the difference? *Emergency Medical Dispatch (EMD)* is an advanced form of dispatch telecommunications based on specific medical training. This training makes the EMD a member of the medical community, and therefore carries responsibilities in addition to those present in basic dispatch telecommunication. An EMD serves as a *part* of the local emergency medical service system.

Module 1 - Unit 1

Introduction to the EMD Roles and Responsibilities

Emergency Medical Service (EMS) includes all personnel of the local public safety system with specific, specialized medical training. An EMS system is defined as a coordinated arrangement of resources (including personnel, equipment and facilities) organized to respond to medical emergencies regardless of the cause. An EMS system covers the spectrum from prevention (changing behavior to prevent injuries from occurring) through rehabilitation (returning individuals to productive lives after an injury producing incident has occurred).

The EMS system is a complex arrangement of components including: statewide legislation; system management; human resources and training; communications; transportation; public information and education; facilities; trauma systems; medical direction and evaluation, all designed to serve the needs of the public in medical emergencies. All the links in the chain of events must be present to complete the EMS system.

EMD vs. EMS

EMD	EMS
is an advanced form of dispatch	is a system
requires specific medical training	includes all aspects of medical service to the community
serves as part of EMS system	includes call-takers through rehabilitation of the patient

1-1-9

Module 1 - Unit 1

Introduction to the EMD Roles and Responsibilities



Resources commonly found in an EMS system. As indicated earlier, each EMS system is different. All members of the EMS system interact differently in one locale and may or may not even exist in another. In general, however, EMS systems contain the following resources;

1. **Basic Life Support (BLS)/Advanced Life Support (ALS)**

Generally, there are multiple types of responding resources available in many EMS systems. They are defined at the state or local level. These resources vary in the types of equipment carried, patient transport capability, treatments that can be provided and the training that the attending personnel have received. These include First Responders, BLS and ALS, defined on the following page.

2. **Fire**

Fire personnel often are part of the local EMS system because they have received specialized medical training. As such, they often are used as resources for emergency medical services.

3. **Police**

Police officers are also part of many EMS systems. They may receive basic first aid training and also are frequently used to assist responding personnel in reaching patients and providing scene safety.

Module 1 - Unit 1

Introduction to the EMD Roles and Responsibilities

4. Hospitals/Emergency Care Facilities

Hospital emergency departments and other emergency care facilities also are included in most EMS systems. Frequently these resources are contacted by the EMD at the request of EMS personnel at the scene. They may be contacted to get specific medical information that the responders might need.

5. Other

There are other resources available in many EMS systems. These include hazardous materials units (aka "HAZMAT"), Sexual Assault Centers, Hyperbaric Centers, Trauma Centers, Poison Control Centers, Burn Centers, Language Translator Services, etc.

?

QUESTION: *Can you name resources commonly found in EMS systems? Think about EMS resources that are available in your EMS system. What are they?*



Tiered EMS System Structures. There are as many EMS system structures as there are places that have EMS systems. These systems usually are broken down into layers or "tiers." Each tier has a different level of response based on local EMS system design. In general there are four tier types. *Not all systems have all of these tiers.*

Module 1 - Unit 1

Introduction to the EMD Roles and Responsibilities

1. **Tier 1.** *First Responders* are used to provide immediate response to events that are determined to be highly urgent. The personnel are often trained in basic life support.

Due to the availability and proximity of these units, they are able to provide quick response and early access to the patients while the ambulance is enroute to the scene. They are able to provide immediate treatment or stabilization of the patient.

2. **Tier 2.** *Basic Life Support (BLS)* EMS units are usually transport ambulances staffed by emergency medical technicians (EMTs). These personnel have at least 110 hours of training in patient assessment and treatment of fractures, lacerations and other minor injuries. They are also CPR trained and are able to provide appropriate care to patients.

EMTs provide treatment and transport of the sick and injured in cases where more advanced treatments and interventions are not required. They also may be used to assist or back up more advanced level EMS responders.

3. **Tier 3.** *Advanced Life Support (ALS)* units are usually staffed by paramedics who have at least 600 hours of coursework and advanced training in the care and treatment of the sick and injured.

There are several levels of ALS. Currently, paramedics are the highest level. All levels of advanced life-support function under medical control and have a physician medical advisor responsible for the medical content of the program.

Other ALS levels include EMT-D (for Defibrillator) and EMT-I (for Intermediate). These individuals, while not as highly trained as paramedics, are trained in defibrillation, breathing support methods (like endotracheal intubation) and are also trained in establishing intravenous lines for delivery of fluids.

Module 1 - Unit 1

Introduction to the EMD Roles and Responsibilities

ALS personnel trained to the paramedic level can perform all functions of basic life support personnel. They also have specialized training in advanced cardiac life support, EKG interpretation and are certified to establish intravenous lines, administer specific cardiac medication along with many other therapeutic medicines under the direction of medical control. They are trained in advanced airway maintenance techniques such as endotracheal intubation and have additional training in anatomy and physiology.

4. **Tier 4. Air Ambulance/Aeromedical Services**
Many EMS systems have air ambulance support available if needed. These are usually hospital based ALS helicopter services staffed by paramedics and nurses.

These resources are used in the most severe cases where transport time to the hospital may be the determining factor in patient survival. They are also utilized in remote areas where EMS ground transport units have difficult access.



Response Modes. As with tiers, response modes vary from place to place. *In general*, they fit into two categories;

1. **"Cold" responses;** no lights or sirens and no special emergency vehicle rules apply; responders are part of the normal traffic flow.
2. **"Hot" responses;** Emergency vehicle traffic laws apply; the responding vehicle uses its lights and sirens and may be permitted to exceed the legal speed limit in order to reach the patient in the quickest possible time.



<p>NOTE: Your agency may have different labels for these terms. If the instructor does not review these terms with you, feel free to ask him or her about them.</p>
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Module 1 - Unit 1

Introduction to the EMD Roles and Responsibilities

Summary

This unit introduced you to the basic roles and responsibilities of EMDs. It also introduced you to basic structures (tiers), resources and responses found in most EMS systems. Finally, you were introduced to the structure, resources and responses used in your EMS system.

In the next unit you will learn about the legal environment in which you work. **Unit 2, Legal and Liability Issues in Emergency Medical Dispatch** provides information about legal concepts that you should know.

Module 1 - Unit 1

Introduction to the EMD Roles and Responsibilities

MODULE 1 - UNIT 2

Legal and Liability Issues in Emergency Medical Dispatch

UNIT OVERVIEW

Emergency Medical Dispatchers work under difficult conditions. The stress associated with the job comes from the nature of the calls and concern over legal issues that can arise from doing your job.

Unit 2, **Legal and Liability Issues in Emergency Medical Dispatch** gives you the legal information on your responsibilities and identifies areas of risk. You will be given some legal terminology with which you should become familiar. Then the unit gives you information on how to avoid legal problems.

UNIT OBJECTIVES

Unit Learning Objectives

Upon completion of this unit, you will be able to:

2. Identify legal and liability issues that the EMD faces.
3. Identify strategies to avoid litigation.

Enabling Learning Objectives

To meet the unit learning objectives, you will:

- 2.1 Define liability.
- 2.2 Describe liability exemptions and dispatcher immunity.
- 2.3 Describe negligence and how courts determine negligence.
- 2.4 Define standard of care.
- 2.5 Describe abandonment.
- 2.6 Describe the two types of consent.

MODULE 1 - UNIT 2

Legal and Liability Issues in Emergency Medical Dispatch

- 2.7 Explain and identify issues that surround confidentiality.
 - 3.1 Explain litigation and how to avoid it.
-

BASIC LEGAL CONCEPTS

As an EMD, you deal daily with life and death situations. The last thing you should have to deal with is legal issues. In order for you to better learn the best ways to deal with legal concerns, you must learn about the most common legal concepts.



Liability

Definition. Liability means that you are ultimately responsible for your actions. Liability is related to negligence, because after negligence is proven in court, liability is assigned to an individual. You and/or your agency can be held liable for damages that may occur as a direct result of negligent actions, practices or conduct.

Exemptions from Liability

- ▶ "Good Samaritan" laws provide protection to persons...
 - acting in emergencies
 - acting in "good faith"
 - acting without regard to financial compensation or reward
 - not guilty of gross negligence or malicious misconduct toward victim

1-2-1



Negligence

Definition. Negligence is defined as "failure to act or perform in a particular situation as any other reasonable, prudent dispatcher (with the same or similar training) would under the same or similar circumstances."

In most cases the person who files a lawsuit ("plaintiff") is seeking compensation ("damages") for damage ("injury") that they allege occurred. Provided that you follow the locally approved EMDPRS and standards, the risk of negligence is significantly decreased.



Proving Negligence. "Intent to Harm" is not required to prove negligence. The best way to understand negligence is to learn how it is determined in court. To prove negligence, the court must determine 4 things:

- 1) **Duty.** *Duty is the responsibility to act or perform according to established standards of care.* The court must show that some "duty to act" existed in the situation. The "duty relationship" begins when the EMD answers a call.
- 2) **Breach of Duty.** To prove negligence, the court must show that there was a breach of duty. That is, that you did not perform your duty (by acting according to the standard of care established by the community).
- 3) **Injury/Damage.** To prove negligence, the court must also prove that damage or injury was done to the patient. The type and amount of injury determines the amount of "damages" awarded to the victim.

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- 4) **Proximate Cause/Causation.** The fourth criteria used to determine negligence is some determination of "causation." This means that the court has to show there is a direct relationship between the action taken by the EMD and the injury to the patient.

Proving Negligence

Court Looks for 4 Things...

- Duty
- Breach of Duty
- Injury/Damage
- Proximate Cause/Causation

1-2-2



Two Types of Negligence. There are two types of negligence you will hear about, Simple and Gross. **Simple negligence** is defined as negligent conduct that was not purposeful or due to "malicious intent" (you didn't mean to do it). **Gross negligence** is defined as a negligent action that was undertaken with malicious intent (you meant to cause harm) and with willful disregard for the safety of persons and/or property.

Two Types of Negligence

- Simple Negligence
- Gross Negligence

1-2-3

Standard of Care



Defined. The standard of care for an area can be defined at any level of government; Local, State or Federal. Usually, the standard used in a court case is the standard used by the local community.



Establishing Standard of Care. The court generally uses four measures of conduct to determine the local "standard of care." These four measures are:

- 1) The EMD's behavior and conduct is judged in comparison to others with similar training and experience;
- 2) The EMD's behavior and conduct is judged in comparison to locally approved protocols and guidelines;
- 3) The EMD's behavior and conduct is judged in comparison to local or state statutes, local ordinances, case law or administrative orders that address the standard of care and

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- 4) The EMD's behavior and conduct is judged in comparison to professional standards published by organizations involved in the development of emergency medical service standards such as the National Academy of Emergency Medical Service Physicians (NAEMSP) and the American Society for Testing and Materials (ASTM).

Establishing Standard of Care

Establishing a "Local Standard of Care"

- ▶ Behavior judged in comparison to...
 - other EMDs with similar training and experience
 - local customs (protocols/guidelines)
 - local or state statutes, ordinances, case law or administrative orders
 - professional standards established and published by agencies involved in emergency work

1-2-4

Other Legal Terms You Should Know



Abandonment. Simply put, abandonment is when you leave a patient who is known to be in a life-threatening condition. This includes **starting** treatment and then letting someone with less training take over resulting in being further injury or decline in the patient's condition.



Principle of Reasonableness. This refers to what a "reasonable person" would do when faced with the same or similar situation.

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Emergency Rule. The Emergency Rule states that "one who is faced with an emergency cannot be held to the same standard of conduct that he/she would otherwise be held to when not faced with such a situation." Simply put, when you face an emergency you can't be expected to act the same as you would if the emergency situation was not there. It is based on the "principle of reasonableness."



Foreseeability. "Foreseeability" refers to the fact that you must rely solely on the information you get from callers (you can't actually see what is happening at the scene). If on-scene findings (by the resources you dispatch) are different (more serious) than those reported by the caller then you are not liable, *provided you followed the local EMDPRS for the reported chief complaint type*. Like the Emergency Rule, it is also based on the "principle of reasonableness."



Detrimental Reliance. A person expects that a certain action will be taken based on the fact that it has been reported in the media ("it was done before for other people"), public education or through simple reasonable expectation. If this action does not occur then the person can claim that they "relied" on the system to act in a certain way, and by doing so it ended up hurting them.



Damages. Anything awarded to winning plaintiffs. In negligence lawsuits, damages can be both "compensatory" and "punitive." *Compensatory damages* are those that involve repaying plaintiffs for money they have lost (lost wages due to lost workdays, hospital/medical bills, etc.). *Punitive damages* are those used to punish a defendant.



Consent. Consent refers to permission to treat the sick or injured. You will usually hear about 2 types, Implied and Actual. ***Implied Consent*** refers to situations where if patients are unconscious and can't respond, it is safe for us to assume that they would want to be helped. ***Actual Consent*** is direct verbal or non-verbal communication to someone giving aid.

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Immunity. Many states have "Good Samaritan" laws. Ask your instructor about this.



NOTE: Good Samaritan Laws do not apply to you while on the job. There may be local or state laws that protect you, but the "Good Samaritan Laws" don't apply under any circumstance.



Governmental immunity is found in some cities and states. This immunity comes from 9-1-1 or EMS laws and usually applies only in cases of "simple negligence" where there was no "malicious intent." These laws do not apply to EMDs in private agencies.

Immunity

"Good Samaritan" Laws and Governmental Immunity

- ▶ Good Samaritan Laws vary from state-to-state
- ▶ Good Samaritan Laws provide immunity when...
 - a person acts in "good faith"
 - a person acts in an emergency
- ▶ Governmental immunity is provided by 9-1-1 or EMS laws and only applies to cases of simple negligence and only to public agencies

1-2-5

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Legal and Liability Issues in Emergency Medical Dispatch

Patient Confidentiality



Issues in confidentiality. You are expected to maintain confidentiality. Patients have the right to expect that any information they give you will be kept confidential. In terms of confidentiality, you:

- 1) can't relate information about patient names;
- 2) can't talk about what *the patient* said;
- 3) can't talk about unusual behaviors that are not related to the medical condition unless danger exists (to responders) and
- 4) can't talk about aspects of a patient's lifestyle.

Only information that is relevant to determine the proper medical response, related to scene safety, patient complaint and condition can be relayed.



NOTE: Ask your instructor to discuss local HIV policies.

Inappropriate Concerns and Misconceptions



More misconceptions and concerns. Some misconceptions that are common to EMD were addressed in Unit 1. In addition to those are the following. These concerns and misconceptions are those that EMDs and the public have. Throughout your training you will see why they are wrong:

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- 1) *EMDs should be certified as CPR instructors.* ASTM standards do not require that EMDs be certified as CPR instructors. Because you work in an environment where you are unable to see the patient for yourself (a "blind environment"), CPR certification is not as vital as being able to tell a caller how to do it via telephone instructions using the approved EMDPRS protocols.
- 2) *EMDs should have advanced medical knowledge.* Because the EMD is operating in a blind environment, having actual "hands-on" advanced medical knowledge is not required. The basic medical concepts presented in this NHTSA curriculum provide sufficient medical knowledge for the EMD to operate effectively.
- 3) *EMDs should relay confidential information to responding personnel.* The EMD should NEVER relay confidential information to responders, including HIV status. The potential for lawsuits is enormous. Confidentiality laws exist to protect citizens.
- 4) *EMDs should fear being sued for giving medical instructions.* As long as you are following the procedures outlined by your agency and using the scripts presented in your locally approved EMDPRS, you are okay. The medical information you are presented with during your training (and found in your EMDPRS) are designed to help, not hurt, patients.
- 5) *EMDs should fear telling callers that an ambulance is "on the way."* This is obviously wrong. One fear that callers have is that help isn't coming. Telling a caller that an ambulance is "on the way", ***once one has been dispatched***, helps callers relax a little, making it easier for you to enlist their help in providing medical assistance to the patient.

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Legal and Liability Issues in Emergency Medical Dispatch

Appropriate Concerns and Dangerous Practices/Behaviors



What to be concerned about. The following are dangerous EMD practices and behaviors with which you should be familiar:

- 1) *failing to send emergency medical services when requested;*
- 2) *subjective judgment of caller credibility;*
- 3) *subjective judgment of the validity of caller's chief complaint;*
- 4) *argumentative/combative attitude on the part of the EMD;*
- 5) *allowing prejudices to affect objective decision making;*
- 6) *giving medical instruction without using locally approved EMDPRS;*
- 7) *failure to train and be certified as an EMD and*
- 8) *not giving instructions when they are needed and you have a protocol for it.*

Appropriate Concerns

- ▶ failure to send resources when requested
- ▶ subjective judgment of caller credibility
- ▶ subjective judgment of chief complaint
- ▶ argumentative or combative EMD behavior
- ▶ allowing prejudices to influence decisions
- ▶ giving medical instructions without using EMDPRS
- ▶ failure to train/be certified as EMD
- ▶ not giving instructions when needed and protocol is available

1-2-6

Avoiding/Reducing Liability (Risk Management)



Avoiding Liability. In an effort to avoid liability, it must be approached at two levels - agency and individual. Remember, avoiding liability means being able to avoid being found liable in a court of law.



Agency Methods. Agencies can use the following methods in an effort to avoid liability. Look for these types of policies/procedures in your agency:

- 1) Existence of well-defined screening/hiring procedures, used in an effort to select the best candidates for EMD.
- 2) Use of a well-organized, written orientation and training program for new employees.
- 3) Regular and objective progress reports given to probationary personnel.
- 4) Clearly defined job expectations and work descriptions.

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- 5) Regularly reviewed and updated policies and procedures.
- 6) Proper EMD training and certification provided.

Avoiding Liability

Agency Methods

- ▶ Good hiring/screening procedures
- ▶ Well-organized, written EMD training/orientation
- ▶ Regular/objective progress reports for probationary personnel
- ▶ Clearly written job descriptions
- ▶ Regular review/update of policies and procedures
- ▶ Proper EMD training and certification

1-2-7

- 7) Appropriate implementation of an EMD program.
- 8) A well-managed EMD program.
- 9) Existence of a formal relationship with a physician who gives medical direction to the EMD program.
- 10) A quality assurance/quality improvement (QA/QI) program implemented for dispatch.
- 11) Existence of an on-going, regular continuing education program.

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- 12) Budgets that allow for QA/QI improvements (including updating training materials and providing personnel and overtime required to carry out these functions).

Avoiding Liability

Agency Methods Continued...

- ▶ Appropriate implementation of EMD program
- ▶ Adequate EMD program management
- ▶ Provide physician who gives medical direction to program
- ▶ Implement QA/QI program for dispatch
- ▶ Implement on-going, regular continuing dispatch education program (CDE)
- ▶ Develop budgets that allow for improvements to be made

1-2-8



Individual Methods. In addition to the methods described above, there are ways that you (as an individual) can avoid liability. These methods are described below.

- 1) Avoid inappropriate behaviors that have been described in this unit and in Unit 1.
- 2) Actively participate in QA/QI and continuing education programs.
- 3) Seek and obtain certification as an EMD.
- 4) Follow the EMDPRS and the policies, procedures and practices established by your agency and the local community.
- 5) Strictly adhere to the protocols and training of the EMDPRS.

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- 6) Report any problems or problematic situations as soon as possible and in writing.

Avoiding Liability

Individual Methods

- ▶ Avoid inappropriate behaviors
- ▶ Participate in QA/QI and CDE programs
- ▶ Get certified as EMD
- ▶ Follow policies, procedures practices established by local agency
- ▶ Report problems/situations as soon as possible and in writing

1-2-9

Summary

This unit has provided you with information about the legal aspects of your job. The purpose of the unit was to provide you with information that would make you comfortable doing your job without undue concern about lawsuits.

You have learned some basic legal concepts that impact your job. This unit also gave you information on the two-pronged approach to avoiding liability through agency and individual methods. Information about additional misconceptions that people have about EMDs and legitimate concerns that you should have were also presented.

The next unit prepares you for EMD by introducing you to some medical concepts that you will have to deal with on a daily basis. These terms and concepts must become familiar to you.

MODULE 1 - UNIT 3

Introduction to Emergency Medical Concepts

UNIT OVERVIEW

As an EMD, you respond to many medical/traumatic emergencies as a regular part of the job. Therefore, it is very important that you know some basic medical information that will assist you in determining the nature and needs of medical emergencies. This information will also make it easier for you to communicate with various people within the EMS system.

Unit 3, Introduction to Emergency Medical Concepts provides you with that basic medical knowledge. You will learn about the seven systems of the body, as well as learn what *really* kills patients. Also included in this unit is basic information regarding shock, bleeding, respiratory distress and a glossary of common medical terms that you will hear at your job.

UNIT OBJECTIVES

Unit Learning Objective

Upon completion of this unit, you will be able to:

4. Describe medical concepts as they relate to the EMD function.

Enabling Learning Objectives

To meet the unit learning objective, you will:

- 4.1 Describe the seven systems of the body.
- 4.2 Describe what really kills a patient.
- 4.3 Define shock.
- 4.4 Describe methods for dealing with bleeding patients and patients in shock.
- 4.5 Describe the levels of consciousness and how to determine them.

MODULE 1 - UNIT 3
Introduction to Emergency Medical Concepts

SYSTEMS OF THE BODY

The human body is a complex organism. To lessen this complexity, it helps to think of it in terms of having seven major systems. Each system has a specific function and, in **most** cases, operates using an entirely different set of organs than the other systems. These systems are explained below.

Seven Systems of The Body

Each system has its own job and special functions that make it different from the other systems. You will learn about the Nervous System, Circulatory System, Respiratory System, Digestive System, Musculoskeletal System, Genito-Urinary System and Skin. Each of these systems is described below.

Seven Systems of The Body

- ▶ Nervous System
- ▶ Circulatory System
- ▶ Respiratory System
- ▶ Digestive System
- ▶ Musculoskeletal System
- ▶ Genito-Urinary System
- ▶ Skin

1-3-1



System 1: The Nervous System. The nervous system is that part of your body that controls all of your body functions and allows for interaction with the outside world through sensation. This system is made up of the brain, spine, spinal column and all of your nerves.

The nervous system is made of three smaller subsystems; the *Central Nervous System*, the *Peripheral Nervous System* and the *Autonomic Nervous System*. Each of these systems is described below.

- 1) The *Central Nervous System* is made up of the brain and the spinal cord.
 - a) *The Brain.* The brain is the control center of the body. Nothing in the body happens without first being told to do so by the brain. It receives input from the nerves that are placed throughout your body and directs all of your body functions. The brain is also responsible for reason and thought.
 - b) *The Spinal Cord.* The spinal cord acts as an electric cable throughout your body. It is responsible for carrying messages from all parts of your body to the brain. It also carries messages from the brain to the parts of your body.
- 2) The *Peripheral Nervous System* is made up of motor and sensory nerves.
 - a) *Motor nerves* are responsible for controlling movement. They tell muscles in your body to contract ("flex") or relax, causing movement.

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- b) *Sensory Nerves.* These nerves send messages to the brain (and get messages from the brain) about the world around you. They are responsible for recognizing feelings of hot, cold, light, pain, smell, taste, motion and balance.
- 3) The *Autonomic Nervous System* is also made up of motor nerves, like the peripheral nervous system.
 - a) It transports messages from the brain to the body using the motor nerves like the peripheral nervous system. It provides automatic and unconscious monitoring and regulation of internal body functions.
 - b) Its functions include heartbeat, the force of the heart's contractions, blood vessel diameter, bronchial diameter and pupil dilation and contraction in response to light levels.

The Nervous System

Parts

- ▶ Central Nervous System
 - brain and spinal cord
- ▶ Peripheral Nervous System
 - motor and sensory nerves
- ▶ Autonomic Nervous System
 - like the peripheral nervous system, it uses motor nerves
 - automatic, unconscious monitoring/regulation of internal body functions (like heartbeat, bronchial diameter, etc.)

1-3-2



System 2: The Circulatory System. The circulatory system carries blood to and from all parts of the body. The blood takes nutrients and oxygen (O_2) to the cells of the body and takes carbon dioxide (CO_2) and other waste products from the cells for removal from the body. The circulatory system is made up of the heart, arteries, veins and capillaries.

- 1) The *Heart* is a four chamber pump and is the most efficient pump known to man. It is located below and to the left of the breastbone (sternum). It pumps blood through a series of one-way valves.
- 2) *Arteries* carry oxygenated blood (blood that is carrying oxygen to cells) away from the heart to the body. Arteries have thick walls that expand and shrink as blood goes through them. They get smaller the further they get from the heart. Most arteries are protected from damage by being buried deep within the muscles or being protected by bones. If cut, arteries bleed a lot of bright red blood that comes out in "spurts."
- 3) *Veins* carry blood toward the heart. This blood has dropped its oxygen payload off for use by the cells and carries cell waste products and carbon dioxide away from the cells, to be eliminated from the body. Veins get larger as you get closer to the heart and do not expand or contract like arteries. If cut, they too can bleed a lot. However, this blood "flows" (not spurts) from the wound and is a dark red color.

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**NOTE:**

A normal adult has approximately 5-6 liters of blood. Simple cuts should clot within 6 to 10 minutes.

- 4) *Capillaries* are thin-walled vessels. They are found between arteries and veins throughout the body. Capillaries carry oxygenated blood from the arteries to the cells of the body and exchange it for carbon dioxide and other waste products made by the cells. The waste products and blood are then taken to the veins and carried back to the heart. If cut, they "ooze."
- 5) *Blood* is made of *plasma* (fluid that carries carbon dioxide, nutrients, hormones and water) *red blood cells*, *white blood cells* and *platelets*. *Red blood cells* carry oxygen to the cells and carbon dioxide away from the body (oxygen sticks to a substance known as *hemoglobin*). *White blood cells* fight diseases, and *platelets* are used to create clots.

The Circulatory System

Parts

- ▶ Heart
- ▶ Arteries
- ▶ Veins
- ▶ Capillaries
- ▶ Blood

1-3-3

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Introduction to Emergency Medical Concepts



System 3: The Respiratory System. The respiratory system is the system that makes/lets us breathe. It takes in the oxygen we need and is responsible for carrying out waste products, like excess water and carbon dioxide. It also is used to help you maintain your body temperature (known as "temperature regulation").



NOTE: It is absolutely necessary to the survival of a human that breathing continue. If breathing stops, the person will die.

Respiration (breathing) is an automatic function. It is controlled by respiratory centers in the brain that are sensitive to the level of carbon-dioxide in your blood. Carbon dioxide levels are constantly being monitored by carbon dioxide and oxygen sensors that are located in your carotid arteries (on the sides of your neck). When oxygen levels are too low you will breathe faster. If the carbon dioxide level gets too high, again, you will breathe faster.



NOTE: Airway obstructions can occur at any point in the respiratory system. It is important to note this and that obstructions don't just occur in the "throat."



Agonal respirations are breaths that occur after cardiac arrest and are ineffective in gathering oxygen for the body. They are frequently described as "weak," "heavy," "gasping," "snoring," "gurgling" or "moaning." The rate at which these respirations occur are usually referred to as "weak or heavy," "occasional" or "every once in a while."

Generally the caller will not identify cardiac arrest to you because the patient shows these respirations. In some cases, you can identify these respirations by listening. You may be able to hear the patient's breathing in the background (when the caller is near the patient).

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The respiratory system is made up of the following parts:

- 1) The *pharynx* is a two channeled organ through which air enters and exits the body. It includes the nasal (in the nose) and oral phalanx (in the mouth). Air can travel in or out through either one of these.
- 2) The *epiglottis* is a leaf-shaped organ that hangs over the opening of the larynx. When you swallow, it covers the larynx, making food go down the esophagus instead of to the lungs.
- 3) The *larynx* is the narrowest part of the respiratory system. Also called the "voice box," it is called this because the vocal cords are found here. If anything gets past your epiglottis and touches them, they will clamp down in an effort to protect your lungs.
- 4) The *trachea* is a round air passage (tube) that is approximately four inches long, through which air passes in and out. It is held open by a series of cartilage "rings."
- 5) The *bronchi* are two passages, each passage going to a lung.
- 6) The *lungs* are where the actual exchange of oxygen and carbon dioxide takes place. Normal humans have two lungs, with the right lung divided into three lobes and the left lung divided into two lobes.
- 7) *Bronchioles* are small air tubes that are found in the body of the lungs. They are simply bronchi that are broken down into smaller branches.
- 8) The *alveoli* are small (microscopic), thin walled air sacs. The oxygen exchange takes place across the membranes between the alveoli and the capillaries.

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- 9) *Diaphragm/Rib Muscles* are used to expand (during inhalation) or contract (during exhalation) your lungs. The diaphragm is the major muscle of breathing. "Intercostal muscles" are located between the ribs and also help you breathe.
- 10) *Pleura* are two thin membranes covering the surfaces of the lung. They serve to lubricate the lung and allow it to easily expand (during inhalation) and contract (during exhalation).

The Respiratory System

Parts

- ▶ Pharynx
- ▶ Epiglottis
- ▶ Larynx
- ▶ Trachea
- ▶ Bronchi
- ▶ Lungs
- ▶ Bronchioles
- ▶ Alveoli
- ▶ Diaphragm/Rib Muscles
- ▶ Pleura

1-3-4

Parts of The Lung

- ▶ Lung
 - Right broken into 3 lobes
 - Left broken into 2 lobes
- ▶ Bronchioles
 - air tubes
 - smaller bronchi inside body of the lung
- ▶ Alveoli
 - air sacs
 - trades oxygen for carbon dioxide with blood

1-3-5



System 4: The Digestive System. This is the system that is responsible for your eating, digesting food and liquids and eliminating waste. The process of digesting food provides your cells with the fuel they need to work. There is only a small number of foods that can be used directly without being broken down.

The digestive system is made of the following components:

- 1) The *mouth* chews food, moistens food with saliva and starts the swallowing process. Saliva is produced by your salivary glands at a rate of about 1.5 liters per day. Chemicals in your saliva start digestion by beginning to break down food.
- 2) Your *throat* consists of the pharynx which is used to transport both food and air. When this is blocked, it is called an "airway obstruction."

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- 3) The *esophagus* is about ten inches long. It forces food down toward the stomach by constant, rhythmic contractions which begin at the top and go to the bottom.
- 4) The *stomach* receives and stores food. It helps push food down toward the bowels. The stomach makes 1.5 liters of *pepsin* per day. Pepsin is used to break down proteins. Digestion in the stomach usually lasts one to three hours.
- 5) Your *small intestine* receives liquids made by your pancreas, liver and gall bladder. These are used to further digest food. The small intestine is approximately twenty feet long and is made of three sections; the duodenum, jejunum and ileum.
- 6) Your *large intestine* is approximately five feet long. Its main purpose is to absorb liquid from digested food as it passes through. It absorbs approximately 5-10% of the moisture residing in the products of digestion.
- 7) The *liver* is a very important organ. It changes sugars, fatty acids and amino acids into simpler products for the body to use. It also neutralizes the harmful products that are produced by digestion. Sugars that are to be used immediately by the body are stored there. The liver also produces products that help your platelets clot, and it also makes products that improve your body's ability to fight diseases.

The Digestive System

Parts

- Mouth
- Throat
- Esophagus
- Stomach
- Small Intestine
- Large Intestine
- Liver

1-3-6

- 8) The *gall bladder* produces and stores bile (approximately 2-3 oz). Bile is used to digest fats in your food.
- 9) The *pancreas* regulates the level of sugar in the blood and also makes juices/enzymes that digest fats, starches and proteins. It has two main functions; producing the enzymes that digest fats, starches and proteins and producing *insulin* (which regulates sugar levels in the blood stream).
- 10) The *appendix* is thought to play a part in the immune responses of children. It is about three to four inches long and has no other known purpose.
- 11) The *spleen* produces and destroys blood cells. It's most important role is in fighting infection by acting as a filter to eliminate bacteria from the bloodstream. If destroyed, part of it's function can be taken over by the bones and marrow in your body.

- 12) The *rectum* is a large, hollow organ used to store feces until expelled.
- 13) The *anus* is about two inches long. It controls the escape of liquids, gases and solids produced by digestion through contraction of the *sphincter muscle*.

The Digestive System

Parts Continued...

- Gall bladder
- Pancreas
- Appendix
- Spleen
- Rectum
- Anus

1-3-7



System 5: The Musculoskeletal System. This is the system of bones, muscles and their connecting tissues. It gives support for the body and provides movement through the actions of muscles and joints. Vital organs like your lungs and heart are protected by bones, which also are responsible for making and destroying blood cells. Bones are also important for storing minerals that your body needs.

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Muscles are attached to bones. Muscles allow you to move through their contracting and relaxing actions. They also help us breathe (remember the diaphragm?), they help circulate blood (the heart *is* a muscle) and they aid in digestion (the stomach).

The musculoskeletal system is made up of the following; the head, vertebral column, chest, upper extremities, pelvis and lower extremities. Other parts include the three types of muscles, tendons and ligaments.

- 1) The *head* is composed of four bone groups; the *skull* (includes the cranium and base), the *face*, *maxillary* (upper jaw) and *mandible* (lower jaw).
- 2) The *vertebral column* is also known as the *spinal column*. It has thirty-three bones, in the following order (head to tail); seven *cervical spine* (base of skull and neck), twelve *thoracic spine* (upper back), five *lumbar spine* (lower back), *sacral fused* (near pelvis) and *coccyx fused* (tailbone).
- 3) The *chest* is comprised of the ribs, sternum (breastbone), xiphoid and the vertebral column in the back.
- 4) The *upper extremity* is made of:
 - a) the *shoulder girdle*, which is made of the *clavicle* (collarbone), the *scapula* (shoulder blade) and the *shoulder joint*;
 - b) the *arm*, which is made of the *humerus* (upper arm);
 - c) the *forearm*, which is made of the *radius* and *ulna* and
 - d) the *hand*, which is made of *carpals*, *metacarpals* and *phalanges*.

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- 5) The *pelvis* is made of the *ilium*, the *pubic symphysis* and the *iliac crest*.
- 6) The *lower extremity* is made of:
 - a) the *upper leg*, which is made of the *femur* (thigh bone), *knee joint* and *patella* (kneecap);
 - b) the *lower leg*, which is made of the *tibia* and *fibula* and
 - c) the *foot* which is made of *tarsals*, *metatarsals* and *phalanges*.
- 7) The three types of *muscles* include:
 - a) *voluntary muscles*, which are consciously controlled (like when you are walking);
 - b) *involuntary muscles*, which are unconsciously controlled (like blood vessels, diaphragm) and
 - c) *cardiac muscles*, which are the muscles that make the heart pump. The contractions are controlled by the autonomic nervous system and by hormones.
- 8) *Tendons* and *ligaments* are connective tissues. Tendons connect your muscles to your bones. Ligaments connect your bones to other bones.

The Musculoskeletal System

Parts

- Head
- Vertebral Column
- Chest
- Upper Extremities
- Pelvis
- Lower Extremities

1-3-8



System 6: The Genito-Urinary System. This system is made up of the organs of waste elimination and reproduction.

All humans have the following four parts in their urinary system. This system is responsible for the removal of liquid wastes from the body and is composed of:

- 1) *kidneys*, which are used to filter wastes from your blood stream and make urine;
- 2) *ureters*, which are tubes that connect kidneys to the urinary bladder and through which urine flows to the bladder;
- 3) a *urinary bladder*, which is the reservoir for urine and
- 4) a *urethra*, which is the tube that urine passes through on the way out of the bladder and body.

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The human reproductive system differs between men and women. Each has its own parts and functions. Female and male reproductive systems are described below.

- 1) The *female reproductive system* is made of the following parts:
 - a) *fallopian tubes*, which carry eggs from the ovaries to the uterus;
 - b) *ovaries*, which produce female hormones; mature, store and release eggs;
 - c) *uterus*, where the fetus (fertilized egg) develops and where menstruation (periods) occurs and
 - d) *vagina*, the birth canal through which babies are born.
- 2) The *male reproductive system* is made of:
 - a) the *prostate*, which surrounds the urethra and produces the fluid that makes up most of the bulk of semen;
 - b) *testes*, which produce sperm and male hormones;
 - c) *scrotum*, which surrounds and protects the testes and
 - d) the *penis*, which contains the urethra and through which semen and urine passes.

The Genito-Urinary System

Parts

- ▶ Kidneys
- ▶ Ureters
- ▶ Bladder
- ▶ Urethra
- ▶ Female Reproductive System
- ▶ Male Reproductive System

1-3-9



System 7: The Skin. The skin is the outer covering of the body and is the largest organ of the body.

Skin serves as a protective barrier against microorganisms, protects the soft tissues and organs below it from injuries and acts like insulation against heat and cold. It even helps remove wastes from the body through sweat.

The skin performs other important functions as well. It provides protection against the sun's rays through pigmentation and it helps convert some of the sun's energy into vitamin-D. Finally, receptors in the skin enable the body to sense pain, heat, cold, touch and pressure.

The skin consists of the following two major components:

- 1) The *epidermis* is the thin, outer layer of skin. It is made up of various cell types, and its thickness varies across different areas of the body (thickest in the hands and feet). The outer layer of the epidermis is constantly being shed. Its cells are non-living and require no blood for nourishment. As long as the epidermis remains intact, no microorganism can enter the body through the skin.
- 2) The *dermis* (or *corium*) is the inner layer of skin. It is the thickest layer of the skin.

The dermis is made up of connective tissue that contains nerves, sweat glands and blood vessels. Sensations like heat, cold, touch, etc. are felt through the nerves found here.

The body's reaction to heat and cold causes the expansion and contraction of the blood vessels found in the dermis. As a result of the expansion and/or contraction of the blood vessels in the dermis, more or less blood flows through the vessels. The end result of this expansion/contraction is the loss or conservation of body heat.

The Skin

Parts

- ▶ Epidermis
- ▶ Dermis (or Corium)

1-3-10

Exercise 1: Systems of the Body - Match Game

Instructions: On the following page is a table consisting of questions and answers. In the left column are twelve answers. Write the number of the question that corresponds to the answer found in the left column.

Write your answers on the lines provided on the left side of the table. You have ten minutes to complete this exercise. Upon completion of this exercise, the instructor will review the answers with you. Be sure to ask any questions you may have at this time.

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<i>Answers</i>	<i>Questions</i>
Central, peripheral and autonomic	1. Narrowest part of the respiratory system; aka "voice box"?
Pharynx	2. Parts of the pelvis?
Pancreas	3. Connect muscles to bones?
Motor and sensory	4. Four major parts of the circulatory system?
Kidneys, ureters, urinary bladder and urethra	5. Three subsystems of the nervous system?
Ilium, pubic symphysis and iliac crest	6. Carry oxygen to the cells?
Heart, arteries, veins and capillaries	7. Regulates level of blood sugar; produces enzymes that break down starches, fats and proteins?
Ligaments	8. Carry oxygenated blood to the body, away from the heart?
Red blood cells	9. Connect bones to bones?
Larynx	10. Two nerve types of the peripheral nervous system?
Tendons	11. Parts of the urinary system?
Arteries	12. Two channeled body through which air enters/exits the body?

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What Really Kills Patients?

Now that you understand the basics of the seven systems of the body, you need to understand what really kills patients.

Many traumatic emergencies get worse as time passes, while medical emergencies tend to get better over time. Three problems can worsen the medical situation over time. These are (1) severe blood loss, (2) breathing obstructions and (3) cardiac arrest. The EMD can have the most effect on these three situations by instructing callers in some form of emergency medical intervention.

Death is caused by many things. *Traumatic causes* are blood loss, airway obstructions that prevent breathing, shock and brain/spinal cord damage. The most common *non-traumatic* cause of death is cardiac arrest.

Levels of Consciousness, Shock and Respiratory Distress

Consciousness, shock and respiratory distress are the 3 major criteria used to determine dispatch categories. At this point you need to know a few things that will help you better do your job.



- 1) Consciousness is very hard to determine without actually seeing the patient. *You must rely on the protocols and information from callers to get you this information.* The protocols are designed to help you do this.



- 2) Not all sick people appear sick. At the same time, patients in shock or respiratory distress will look sick. When responding personnel get to the patient and they see a pale, diaphoretic ("sweaty"), weak and nauseous person they immediately know they have a sick person on their hands.



- 3) It is up to you to be able to recognize these truly sick people based on the information you get from callers.



Levels of Consciousness. There are four levels of consciousness that you need to learn. They are taught in order of their level of severity, with alert being the highest level and unresponsive being the lowest and most serious.

- 1) *Alert* (is the patient awake and aware of their surroundings?) is the highest level of consciousness. If a patient is determined to be alert, then there is less cause for concern.
- 2) *Verbal* is the second highest level of consciousness. These patients are awake only when you talk to or yell at them (verbal stimulus). They tend to fall asleep unless you constantly talk to them.
- 3) *Pain* is the second lowest level of consciousness. A person in this state is only able to be awakened with noxious (painful) stimuli. They require noxious stimulants to stay awake.
- 4) *Unresponsive* is the lowest and most dangerous level of consciousness. Patients in this state can't be aroused by *any* stimulus.

Levels of Consciousness

From Highest to Lowest Level

- ▶ Alert
- ▶ Verbal
- ▶ Pain
- ▶ Unresponsive

1-3-11



Determining Consciousness. How can you determine consciousness? Your EMDPRS protocols will help you figure out a patient's consciousness level. Generally, you can determine consciousness by asking the caller:

- 1) Is the patient awake?
- 2) Have you tried to wake them up?
- 3) Can they talk to you?

Don't worry about using consciousness categories with the responders. For example, if the caller says that the patient is talking gibberish and can only stay awake when they yell at him, then tell that to the responding personnel. You just need to recognize the level of consciousness and dispatch accordingly.

**NOTE:**

From a dispatcher's perspective, you are trying to determine whether a patient is conscious or is in an altered state of consciousness. Your priority is airway maintenance. It is not so important to determine why the patient is unconscious, all that matters is that the patient *is* unconscious. If the patient is unconscious, turn them on their side and monitor their breathing.

**QUESTION:**

Can you describe the levels of consciousness? How do you determine each level of consciousness?



Shock. Shock is a major killer of patients. It can rapidly appear almost without symptoms. For this reason, shock is often called the "silent killer." It is defined as "inadequate tissue perfusion." This simply means that there is a lack of circulation throughout the body, but most importantly to the major organs (heart, lungs, brain, kidneys, etc.).



- 1) *Symptoms of shock* (described by patient) include the following. Not all patients show these, and sometimes **none** are present:
 - a) a feeling of "impending doom" (that something terrible is going to happen soon, that death might be imminent);
 - b) weakness;

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- c) nausea;
- d) thirst;
- e) dizziness;
- f) coolness and
- g) restlessness/anxiety.

Symptoms of Shock

Identified by Victim

- Sense of "Impending Doom"
- Weakness
- Nausea
- Dizziness
- Coolness
- Restlessness/Anxiety

1-3-12



- 2) *Signs of shock* (described by the caller based on their own observation) include the following:
- a) pale, cool and/or moist skin;
 - b) shallow and/or rapid breathing;
 - c) lackluster eyes and/or dilated pupils (pupils appear larger than they should);

- d) decreasing levels of consciousness leading to unconsciousness;
- e) fluid loss from bleeding, vomiting or diarrhea;
- f) weak or "thready" pulse and
- g) a steady drop in blood pressure.

Signs of Shock

Identified by Caller (Other Than Victim)

- ▶ Pale/cool/moist skin
- ▶ shallow/rapid breathing
- ▶ lackluster eyes/dilated eyes
- ▶ decreasing consciousness
- ▶ fluid loss
- ▶ weak/"thready" pulse
- ▶ steady blood pressure drop

1-3-13



Types of shock. There are many types of shock. You may never encounter them all, but the most common are listed and described below.

- 1) *Anaphylactic shock* (also called "allergic shock") usually accompanies the ingestion or inhalation of a substance to which a patient is severely allergic. It frequently occurs with insect stings as well. Signs and symptoms include difficulty breathing, swelling of the face and or tongue, tightness in the chest, itching/burning skin and hives covering large parts of the body.

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- 2) *Cardiogenic shock* occurs when the heart is no longer able to develop enough pressure to circulate blood properly.
- 3) *Hemorrhagic shock* occurs when the body loses large amounts of blood through internal or external bleeding. It also occurs with hypovolemic shock.
- 4) *Hypovolemic shock* occurs when the body loses large amounts of body fluids through vomiting or diarrhea.
- 5) *Neurogenic shock* usually occurs with spinal cord damage. Blood vessels that are normally tightened ("constricted") begin to relax and blood pressure rapidly drops. Blood begins to pool below the level of the spinal cord injury.
- 6) *Psychogenic shock* (aka "fainting;" aka "vasovagal reaction") occurs when blood vessels suddenly dilate (expand or relax) due to some shock to the system like extreme fear or minor injury. Blood flow to the brain is temporarily interrupted and the person "faints."
- 7) *Septic shock* is caused by severe infections. Toxic substances from the infection cause blood vessels to dilate and plasma to be lost through vessel walls.



NOTE: The most common types of shock you will encounter are anaphylactic, cardiogenic, hemorrhagic, hypovolemic and septic.

Seven Types of Shock

- Anaphylactic
- Cardiogenic
- Hemorrhagic
- Hypovolemic
- Neurogenic
- Psychogenic
- Septic

1-3-14



Dealing With Shock. Shock can kill. There are any number of things you can tell callers to do to alleviate the danger of shock until help arrives. These are listed and described below.

- 1) DO NOT GIVE THEM ANYTHING TO EAT OR DRINK!
- 2) Make sure the patient's airway is clear so they can breathe.
- 3) Control bleeding (if external) by the use of direct pressure.
- 4) Calm and reassure the patient.
- 5) Lay patient on side (preferably left-side) or allow them to remain in a position that is most comfortable, unless they are trauma patients.
- 6) DO NOT MOVE TRAUMA PATIENTS!!!!

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- 7) Keep the patient warm and prevent the loss of body heat by covering the patient with something.

Dealing with Shock

Common Instructions

- ▶ Clear airway
- ▶ Control bleeding
- ▶ Calm/reassure patient
- ▶ Keep patient flat unless comfortable in another position
- ▶ Keep patient warm
- ▶ DO NOT GIVE FOOD OR DRINK!!

1-3-15

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QUESTION: *What is shock? What are its signs and symptoms? Can you name five types of shock? How would you tell a caller to deal with shock?*



Respiratory Distress vs. Breathing Difficulty. Callers will often say that a person is "having a hard time breathing." It is up to you to determine if the caller is describing respiratory distress or breathing difficulty.

It is hard to tell if a patient is suffering from respiratory distress or has a breathing problem without understanding the difference. Each can occur from a variety of sources, including benign (not dangerous) sources like allergies or colds. Because of the difficulty in distinguishing true respiratory distress from breathing difficulty, these calls can be among the most challenging you will face.

Breathing Difficulty Scenarios

- 1) The breathing problem is present with other symptoms or chief complaint types (more on these in Module 3).
- 2) The patient appears sick, but it may be due to the chief complaint and not the breathing difficulty.
- 3) Most people have breathing difficulty when vomiting. However, this does not constitute "distress."



True Respiratory Distress

- 1) Patients in true respiratory distress are *very* sick people. These patients *look, act* and *sound* sick, usually being able to speak only short phrases (or 1 to 2 word sentences) if they have to speak. Their breathing may be described by callers as very "noisy" (**or very quiet**).
- 2) Patients in true respiratory distress are putting all of their efforts and energy into trying to breathe or getting where they think there might be more air. They look as if they were (and still are) working hard.

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- 3) Patients in respiratory distress appear sweaty (diaphoretic), pale and sometimes blue (cyanotic). What is happening is that in cases of true respiratory distress, the patient is rapidly running out of oxygen, losing the ability to keep on breathing often due to fatigue or airway obstruction.
- 4) Choking is also a form of respiratory distress. Persons with obstructed airways will demonstrate classic choking symptoms. The caller will immediately recognize these as such, unless the caller was not present when the victim choked and found the victim in a collapsed state.



Signs and Symptoms of Respiratory Distress include any of the following. Symptoms and signs can occur in any combination. Some symptoms are:

- 1) Classic choking symptoms (clutching or grasping at the throat);
- 2) anxiety/restlessness (as the body reacts to a lack of oxygen to the brain);
- 3) cyanosis (patient turning blue);
- 4) rapid breathing (tachypnea);
- 5) noisy respiration;
- 6) labored appearance; patient appears to be working hard and
- 7) the patient may be sweaty (diaphoretic).

?

QUESTION: *Can you describe respiratory distress? What are the major signs and symptoms of true respiratory distress? How is it different from breathing difficulty?*

Respiratory Distress

Signs and Symptoms

- ▶ Anxiety/Restlessness
- ▶ Cyanosis (turning blue)
- ▶ Tachypnea (rapid breathing)
- ▶ Noisy respiration
- ▶ Labored appearance
- ▶ Diaphoretic (sweating)

1-3-16



Bleeding

Bleeding has its own set of unique problems and may elicit strong emotional responses. Severe bleeding must be treated immediately.

The body attempts to stop bleeding using the process we call "clotting." Blood platelets break down and block the hole through which the blood is escaping. When the bleeding is severe (as with a cut artery), the clotting can't happen fast enough or completely enough to fill the hole, resulting in shock and then death.

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Control of Bleeding. Almost all bleeding can be stopped through the use of *direct pressure*. The caller (or a bystander) is told to use a universal bandage or clean gauze pad and press down directly on the open wound. In most situations, callers won't have these. Tell them to use the cleanest cloth available.



NOTE: *This is very important.* When telling callers to use direct pressure, tell them to *put a lot of pressure on the wound*. Using lots of pressure will stop even arterial bleeds.

Tell callers not to remove soaked bandages (or "dressing") because this will rip open the clot that is forming in the wound. If they feel they need to replace the bandage because it is soaked, simply place another on top and continue pressure. If the bleeding has stopped, they can tie the dressing in place with a bandage.

Elevate bleeding extremities. This method is good for extremities because it gets the bleeding limb up higher than the heart, thereby slowing the flow of blood through the force of gravity.



NOTE: In cases of internal bleeding, you just need to recognize it due to shock issues...there's not a lot you can do about it!!!



A Word About Tourniquets. Tourniquets can cause a lot of damage by stopping the flow of blood completely through a limb (usually). This causes nerve and cell damage that is frequently permanent and can even be the cause for an amputation.



IF A CALLER SAYS THAT A TOURNIQUET HAS ALREADY BEEN APPLIED, LEAVE IT ON! NEVER INSTRUCT CALLERS TO APPLY A TOURNIQUET.

**Exercise 2: Bleeding, Shock and Respiratory
 Distress - Match Game**

Instructions: On the following page is a table consisting of questions and answers. In the left column are ten answers. Write the number of the question that corresponds to the answer found in the left column.

Write your answers on the lines provided on the left side of the table. You have ten minutes to complete this exercise. Upon completion of this exercise, the instructor will review the answers with you. Be sure to ask any questions you may have at this time.

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<i>Answers</i>	<i>Questions</i>
Symptoms	1. Characteristics described by callers about patients?
"Impending doom," weakness, nausea, coolness	2. Signs of shock?
Shock	3. Types of shock?
Signs	4. Signs of respiratory distress?
Alert, Verbal, Pain and Unresponsive	5. Characteristics described by patients about themselves?
Hypovolemic, hemorrhagic and anaphylactic	6. Process by which platelets break down and block holes where blood is escaping?
Anxiety, cyanosis, rapid breathing, labored appearance, sweaty, noisy respirations	7. Inadequate tissue perfusion; aka "silent killer?"
Neurogenic shock	8. Relaxation of blood vessels, allowing blood to pool below the level of the injury?
Moist skin; shallow breathing; dilated pupils; decreasing consciousness	9. Symptoms of shock?
Clotting	10. Four levels of consciousness?

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Common Medical Terms

As an EMD you will hear many medical terms. It is important that you become familiar with these terms so you can interpret them for your own use, or as needed to callers. Over time you will become more familiar with them because you will hear them frequently.

Following is a list of terms with which you should become familiar.

- 1) ***Abdominal aortic aneurysm*** - dilated section of the lower aorta in the abdomen; can rupture causing severe pain, internal bleeding and even death
- 2) ***Abrasion*** - type of injury caused by the scraping away of portions of skin
- 3) ***Acute*** - sharp, severe or having rapid onset; usually short course and not chronic
- 4) ***Anaphylactic shock*** - state of collapse due to injection of or exposure to (including ingestion, breathing and skin contact) a substance to which the victim is allergic
- 5) ***Angina (also angina pectoris)*** - a steady, dull, squeezing pressure; choking or suffocating pain; almost exclusively used to indicate heart or chest pains; can radiate out to the neck, arms or shoulder; is due to the lack of adequate oxygen delivery to the heart muscle (through blockage of coronary arteries)
- 6) ***Anoxia*** - lack of oxygen

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- 7) **Appendicitis** - inflammation of the appendix resulting in severe pain, fever and nausea
- 8) **Arterial hemorrhage** - bleeding from an artery; a cut or punctured artery will usually emit bright red blood in spurts or waves (though it can be a steady flow if the artery is deeply buried)
- 9) **Asthma** - disease characterized by spasms of bronchial tubes, resulting in shortness of breath and "wheezing"; can be fatal if not quickly treated
- 10) **Benign** - not dangerous; not recurrent or progressive
- 11) **Blood pressure** - the pressure exerted by the blood against the walls of the arteries as it travels through the body
- 12) **Cardiac arrest** (aka "Sudden Death") - sudden cessation of heart functions; usually confused with myocardial infarction (MI)
- 13) **Carbon monoxide** (CO) - a poisonous gas found mainly in exhaust fumes of gasoline and diesel powered engines
- 14) **Cardiopulmonary Resuscitation** (also CPR) - the act of attempting to restore consciousness via manual heart massage and lung inflation
- 15) **Contusion** (aka "bruise") - an injury in which the skin is not broken; usually due to sudden impact with hard objects
- 16) **Cranial** - pertaining to the skull

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- 17) **Croup** - disease characterized by difficult breathing and feelings of suffocation accompanied by an intense, barking cough and swelling of the larynx and/or upper trachea
- 18) **Crowning** - a state of childbirth in which the baby's head is seen
- 19) **Cyanosis** (*also cyanotic*) - discoloration of the skin (usually a gray, blue or purple tint) due to a lack of oxygen in the blood
- 20) **Diaphoresis** - profuse sweating; is one symptom of respiratory distress but can occur for any reason
- 21) **Ectopic pregnancy** (aka "tubal pregnancy") - a potentially life-threatening circumstance when a fetus implants itself in a fallopian tube rather than the uterus; after growing there for approximately six weeks, the fetus may rupture through the wall of the tube, causing hemorrhage, severe pain and life-threatening internal bleeding
- 22) **Hemoglobin** - iron containing pigment of the red blood cells
- 23) **Hematoma** - swelling caused by blood outside of the blood vessel
- 24) **Hemorrhage** - Abnormal internal/external discharge of blood
- 25) **Hiatal hernia** - partial slippage of the upper stomach above the diaphragm; protrusion of the stomach through the diaphragm
- 26) **Hives** - eruptions of very itchy spots on the skin; usually associated with allergies

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- 27) **Hyperventilation** - increase in the inspiration and expiration of air as a result of an increase in the rate or depth of respiration; usually accompanied by great anxiety; does not usually exist in isolation (is usually symptomatic of a more serious, underlying problem)
- 28) **Hyphema** - blood in the anterior chamber of the eye in front of the iris
- 29) **Hypothermia** - drastic lowering of body temperature usually caused by prolonged exposure to extreme cold
- 30) **Hypovolemia** - diminished blood volume
- 31) **Laceration** - a tear or cut in the flesh
- 32) **Meningitis** - inflammation of the spinal cord or brain causing intense headaches, intolerance to light or sound and possibly delirium, convulsions and/or coma
- 33) **Migraine** - severe headache, frequently resulting in disordered/distorted vision, nausea and vomiting
- 34) **Myocardial Infarction** (aka M.I. or "Heart Attack") - death of an area of the heart muscle due to obstructions in blood flow or sometimes confused with cardiac arrest which is the end result of an M.I.
- 35) **Ocular trauma** - injury to the eye
- 36) **Orbital fracture** - a break in the portion of the skull that encases the eyeball
- 37) **Paralysis** - loss or impairment of motor function due to injury in part of the body

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- 38) **Pericarditis** - inflammation of the sac that encloses the heart
- 39) **Perineum** - the genital area
- 40) **Pulse** - a pressure wave exerted against the arteries upon the contraction of the heart; can be felt by placing fingertips on an artery where it passes close to the skin
- 41) **Signs** - something a rescuer can see, hear, feel and occasionally taste concerning a patient; *not the same as symptom*
- 42) **Stroke** - sudden interruption of blood flow to an area of the brain (due to obstruction, bleeding, clot, etc.) causing loss of strength, feeling, speech or even decrease in consciousness
- 43) **Symptom** - something a patient expresses about themselves; examples are "My chest hurts; I'm cold; I have a sharp pain in my head," etc.
- 44) **Tachypnea** - rapid breathing; is one symptom of respiratory distress
- 45) **Thoracic Aortic Aneurysm** - dilation of a main blood vessel in the chest cavity
- 46) **Tourniquet** - a bandage wrapped tightly around an extremity used to slow or stop bleeding/blood loss
- 47) **Toxic** - poisonous
- 48) **Trauma** - an injury (physical, emotional or psychological) inflicted by some violent event or other external force
- 49) **Venous** - of or pertaining to the veins

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Summary

This unit has given you the basic medical knowledge that you must have in order to successfully understand and deal with the medical issues that you will face on a daily basis. The information given to you in this unit is basic information. All descriptions and/or definitions are generic. They are not strict medical definitions.

This unit will help prepare you for using the EMDPRS that you will be taught in Module 3. Before you get to that point though, you need to learn how to get information from the people who call you. **Module 2, Information Gathering and Dispatch** teaches you how to do this.

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